APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/911,811	07/24/2001	Ulrich Hetzer	P01,0236	6272

26574   7590   02/21/2003

SCHIFF HARDIN & WAITE
6600 SEARS TOWER
233 S WACKER DR
CHICAGO, IL 60606-6473

EXAMINER
LIANG, LEONARD S

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 02/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence addr ss --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____ .

2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-23_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1-23_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☒ All b) ☐ Some * c) ☐ None of:

      1. ☒ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _7_ .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: .

DETAILED ACTION

Specification

1.   The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

The disclosure is objected to because of the following informalities:

On page 5, line 17, the specification discloses "The control unit is programmed it to implement..." This is grammatically incorrect. It will be construed that the specification should state "The control unit is programmed to implement..."

On page 8, line 12, the specification discloses "fashion as a liit value". This is a minor spelling error. It will be construed that the specification should state "fashion as a limit value".

Appropriate correction is required.

Claim Objections

2.   Claims 15 and 20-22 are objected to because of the following informalities:

Claim 15 states "wherein the step of determining said warmup data comprise**d** determining said warmup data by applying a computational **algarythum**..." This contains a form error, and a minor spelling error. It will be construed that the claim should state "wherein the step of determining said warmup data comprises determining said warmup data by applying a computational **algorithm**..."

Claim 20 states "determining said warmup data for said for said fast start..." This is grammatically incorrect. It will be construed that the claim should state "determining said warmup data for said fast start..."

Claim 21 states "data representing temperature of said ink jet print head a first parameter..." This does not grammatically make sense. It will be construed that the claim should state "data representing temperature of said ink jet print head, a first parameter..."

Claim 22 states "operating said first ink cartridge in said warmup cycle with said warmup data and operating said second ink cartridge **ink** said warmup cycle..." This is grammatically incorrect. It will be construed that the claim should state "operating said first ink cartridge in

said warmup cycle with said warmup data and operating said second ink cartridge in said

warmup cycle..."

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on

sale in this country, more than one year prior to the date of application for patent in the United States.
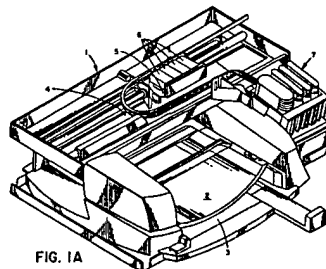
3.   Claims 1-4, 6-8, 10-17, and 20-22 are rejected under 35 U.S.C. 102(b) as being

anticipated by Bullock et al (US Pat 5812156).
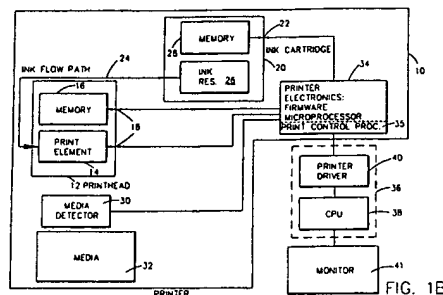
Bullock et al discloses:

- {claim 1} An ink cartridge (figure 4, reference 20)

FIG. 4
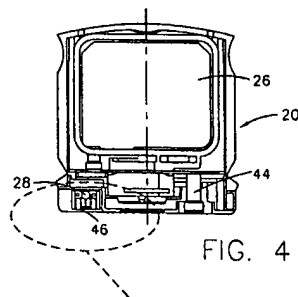
having an ink jet printhead (figure 1A, reference 6)

FIG. 1A

and a drive unit (figure 1B, reference 40)

FIG. 1B

connected to the ink jet printhead for heating, measuring a temperature of, and driving the ink jet printhead (column 4, lines 1-13); control unit (figure 1B, reference 38); first and second memory areas (column 4, lines 14-67; Bullock et al teaches that "each of memories 16 and 28 includes both factory-written and printer-data values, which implies warm-up values (such as temperature sense resistor calibration data)); a sensor for measurement of ambient temperature (column 4, lines 4-6); the control unit being programmed to implement at least one measurement of the ambient temperature with the sensor, and to determine warmup data for a fast start for a current warmup cycle dependent upon the ambient temperature and dependent on the at least one predetermined condition (column 4, lines 4-17; Bullock et al teaches "cartridge memory 28 and printhead memory 16 enable microprocessor 34 to calculate control values which enable printer 1 to maintain high quality print media output. This teaching naturally suggests warmup data for a fast start for a current warmup cycle as a means for the printer to maintain high quality print output)

- {claim 2} second memory (figure 1B, reference 28; column 4, lines 14-67)
- {claim 3} serial number (column 4, line 41)
- {claim 4} manufacture identification number (column 4, line 25)
- {claim 6} the memory is disposed on the ink cartridge and wherein the second memory area additionally contains identification data uniquely identifying the ink cartridge and data representing further predetermined conditions allocated to the identification data, and wherein the control unit is programmed to interrogate the memory to execute the data followup employing the further predetermined

conditions allocated to the identification data (figure 1B, 4, reference 28; column 2, lines 27-32; column 4, lines 1-67)

- {claim 7} serial number (column 4, line 41)

- {claim 8} manufacture identification number (column 4, line 25)

- {claim 10} the drive unit includes a sensor for measuring the temperature of the ink jet printhead, the sensor generating sensor data representing the temperature, and wherein the control unit is programmed to interrogate the sensor data via the drive unit for determining the warmup data (column 4, lines 4-17; column 6, lines 49-52)

- {claim 11} user interface (figure 1B, reference 38; column 2, lines 14-17; column 3, lines 1-8; The teaching "When a printing operation is initiated..." naturally suggests user interface); communications link (figure 1B, reference 38; column 3, lines 1-8; column 4, user is identified by CPU as one who initiates print operation and installs cartridge)

- {claim 12} date clock module (column 4, lines 36-38, 49, 57; column 5, lines 2-4; manufacture day/year and usage time naturally suggests date clock module)

- {claim 13} storing warmup data and data representing a first condition in a memory of an apparatus employing an ink jet printhead upon installation of an ink cartridge for the ink jet printhead in the apparatus, before a first use of the newly installed ink cartridge (column 2, lines 10-38); accumulating and storing parameter data for second conditions for a fast start of the ink jet print head during repeated use of the ink jet printhead (column 2, lines 10-38; column 4); determining warmup data for the second conditions from the parameter data and employing the warmup data for the second conditions in at least one warmup cycle of the ink jet printhead (column 2, lines 10-38; column 4)

- {claim 14} storing the parameter data in a table (figure 6); electronically accessing the table to retrieve the parameter data therefrom and determining the warmup data from the retrieved data (column 3, lines 35-44; column 2, lines 9-38)

- {claim15} computational algorithm (column 6, lines 21-54)

- {claim 16} the step of accumulating and storing parameter data comprises accumulating and storing parameter data representing use of the ink cartridge, and wherein the second conditions comprise temperature-related data and history-related data, and wherein the step of determining the warmup data comprises determining the warmup data dependent on the parameter representing use, the temperature-related data and the history-related data (column 4; column 2, lines 9-38)

- {claim 17} the additional step of entering a user-selected parameter into the apparatus, and wherein the second conditions comprise temperature-related data and user-related data, and wherein the step of determining the warmup data comprises determining the warmup data from the parameter entered by the user, the temperature-related data and the user-related data (column 2, lines 9-38; column 4; user replacing cartridge is equivalent to user inputting a user-selected parameter because parameters and warm-up data will vary according to type of cartridge input)

- {claim 20} uniquely allocating identification data to the ink cartridge (column 4); before each use of the ink cartridge, interrogating the identification data and checking the identification data to authenticate the identification data (column 2, lines 9-38; column 3, lines 36-44; interrogating and checking identification data occurs constantly); determining the warmup data for the fast start according to a first procedure if the ink cartridge is authenticated and according to a second procedure if the ink cartridge is not authenticated (inherent; Bullock et al teaches replaceable printheads, and parameter adjustment based on the printhead. If a printhead is authenticated, the parameters will remain the same, but if the printhead is replaced, the new printhead won't be immediately authenticated based on the old parameters; new parameters will respond to the new printhead according to a new procedure)

- {claim 21} the second conditions comprise data representing ambient temperature, data representing temperature of the ink jet print head, a first parameter dependent on use of the ink cartridge, and a user-entered second parameter indicating selection of a shortened warmup cycle (column 4; warmup cycle time is dependent on the temperature sense resistor calibration data; as the user enters a new printer cartridge, this temperature data will change, thus the user can input a parameter indicating selection of a shortened warmup cycle)

- {claim 22} the ink cartridge is a first ink cartridge, and comprising the additional steps of providing a second ink cartridge in the apparatus and determining different warmup data for the second ink cartridge, and operating the first ink cartridge in the warmup cycle with the warmup data and operating the second ink cartridge in the warmup cycle with the different warmup data (column 2, lines 10-38)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 5 and 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Bullock et al (US Pat 5812156) in view of Berson (US Pat 5513563).

Bullock et al discloses:

- {claim 1} An arrangement for data follow-up for a warmup cycle of an ink jet printhead (as taught in claim 1)

- {claims 5 and 9} serial number and manufacture identification number (column 4, lines 25, 41)

Bullock et al differs from the claimed invention in that it does not disclose:

- {claims 5 and 9} the control unit comprises a security module for forming a code word by encryption of the serial number and the manufacture identification number, and wherein the control unit stores the code word in the second memory as at least a portion of the identification data

Berson discloses:

- encrypting serial number (column 3, lines 18-22)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Berson into the invention of Bullock et al so that serial numbers could be encrypted. The motivation for the skilled artisan in doing so is to gain the benefit of providing verifiable security (column 1, lines 46-47). The combination naturally suggests encrypting manufacture identification numbers and the control unit storing the code word in the second memory as at least a portion of the identification data.

5.   Claims 18-19 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bullock et al (US Pat 5812156) in view of Hirabayashi et al (US Pat 5477246).

Bullock et al discloses:

- {claim 13} A method for determining data for a warmup cycle of an ink jet printhead (as taught in claim 13)
- {claim 18} voltage pulse having a pulse amplitude and a pulse duration (inherent)
- {claim 19} temperature-related data, history-related data, user-related data (column 4); voltage pulse having a pulse amplitude and duration (inherent)
- {claim 23} first ink cartridge with a first voltage pulse having a pulse amplitude and a pulse duration; second ink cartridge with a second pulse having a pulse duration and a pulse amplitude (inherent)

Bullock et al differs from the claimed invention in that it does not disclose:

- {claim 18} modifying the pulse amplitude in the warmup cycle and maintaining the pulse duration at a constant value during the warmup cycle, the constant
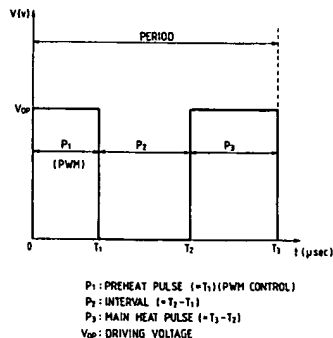
value being shorter than a pulse duration when operating the ink jet printhead for
printing

- {claim 19} modifying the pulse amplitude during the warmup cycle dependent
  on the temperature-related data and the history-related data, and modifying the
  pulse duration during the warmup cycle dependent on the user-related data

- {claim 23} modifying the pulse duration of one of the first pulse and the second
  pulse, while maintaining the pulse amplitude of the first pulse and the second
  pulse equal

Hirabayashi et al discloses:

- {claim 18} modifying the pulse amplitude in the warmup cycle and maintaining
  the pulse duration at a constant value during the warmup cycle, the constant
  value being shorter than a pulse duration when operating the ink jet printhead for
  printing (figure 9; column 11, lines 30-53)

FIG. 9

V(v)

PERIOD

Vop

P₁   P₂   P₃

(PWM)

0   T₁   T₂   T₃   t (μsec)

P₁ : PREHEAT PULSE (=T₁)(PWM CONTROL)
P₂ : INTERVAL (=T₂-T₁)
P₃ : MAIN HEAT PULSE (=T₃-T₂)
Vop : DRIVING VOLTAGE

- {claim 19} modifying the pulse amplitude during the warmup cycle dependent
  on the temperature-related data and the history-related data, and modifying the
  pulse duration during the warmup cycle dependent on the user-related data
  (column 11, lines 30-53; Hirabayashi et al teaches that pulse amplitude is
  determined by area, resistance, and film structure of the H.B., and the nozzle
  structure of the head, while pulse widths are determined by the area resistance,
  and film structure of the H.B., the nozzle structure of the head, and the inks
  physical properties. Thus amplitude is dependent on temperature related data
  (heater board energy; column 11, lines 30-32) and pulse duration (i.e. width) is

dependent on user-related data (i.e. ink's physical properties; user can choose
type of ink cartridge to use; column 11, lines 50-53)

- {claim 23} modifying the pulse duration of one of the first pulse and the second
  pulse, while maintaining the pulse amplitude of the first pulse and the second
  pulse equal (column 11, lines 30-53; Hirabayashi et al teaches that pulse
  amplitude is determined by area, resistance, and film structure of the H.B., and
  the nozzle structure of the head, while pulse widths are determined by the area
  resistance, and film structure of the H.B., the nozzle structure of the head, and the
  inks physical properties. Therefore it is possible to modify pulse duration while
  maintaining pulse amplitude by modifying an inks physical properties)

It would have been obvious to one having ordinary skill in the art at the time the
invention was made to incorporate the teachings of Hirabayashi et al into the invention of
Bullock et al so that there is modifying of the pulse amplitude in the warmup cycle and
maintaining of the pulse duration at a constant value during the warmup cycle wherein the
constant value is shorter than a pulse duration when operating the ink jet printhead for printing;
modifying of the pulse amplitude during the warmup cycle dependent on the temperature-related
data and the history-related data; and modifying the pulse duration during the warmup cycle
dependent on the user-related data and there is modifying of the pulse duration of one of the first
pulse and the second pulse, while maintaining the pulse amplitude of the first pulse and the
second pulse equal. The motivation for the skilled artisan in doing so is to gain the benefit of
controlling ink temperature in nozzles and ejecting ink droplets from nozzle orifices (column 11,
lines 30-48). The combination naturally suggests replacing ink cartridges with different ink
properties so that the pulse duration is modified while the pulse amplitude is maintained. The
combination also naturally suggests having the pulse amplitude dependent on history-related data
(in view of Bullock et al column 4).

Conclusion

6.   The prior art made of record and not relied upon is considered pertinent to applicant's
disclosure.

Smith et al (US Pat 4791435) discloses thermal inkjet printhead temperature control.

Mitsuzawa et al (US Pat 6478399) discloses a printer and print head unit for same.

Helterline et al (US Pat 6039430) discloses a method and apparatus for storing and retrieving information on a replaceable printing component.

Barbour et al (US Pat 6435668) discloses a warming device for controlling the temperature of an inkjet printhead.

Fuse (US Pat 5673071) discloses a preparatory head drive method for an ink jet printer.

Numata et al (US Pat 6126266) discloses an ink jet recording apparatus and method using replaceable recording heads.

Allen et al (US Pat 5406315) discloses a method and system for remote-sensing ink temperature and melt-on-demand control for a hot melt ink jet printer.

Corrigan (US Pat 6154229) discloses a thermal ink jet print head and printer temperature control apparatus and method.

Keeling et al (US Pat 5455606) discloses an ink jet printer with control.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard S Liang whose telephone number is (703) 305-4754. The examiner can normally be reached on 8:30-5 Monday-Friday.
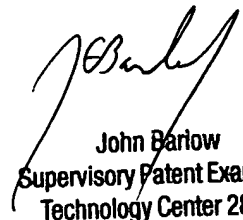
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (703) 308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

lsl   LSL

February 13, 2003

John Barlow
Supervisory Patent Examiner
Technology Center 2800